Multi-site Development

One size fits all?

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CASE Study

- Localization of Medical software.
- Many product teams
  - Located in US, NL and CZ.
- Products deployed on shared target

Take-aways after this presentation

- *Unified process* for a functional group in a global company is beneficial
- *Bottom-up* approach to change is effective
- Change starts with supporting legacy
- A new tool will not solve your problems

Overview

- Setting the Context
- Vision
- Solution to unify the Localization process
- Approach to implement the new process
- Results
- Conclusions

History and Background

Founded in 1949 as a medical equipment service company

Our Mission

" To contribute to human welfare by the application of biomedical engineering to alleviate pain, restore health and extend life."

Medtronic today: globally active

>36,000 Employees

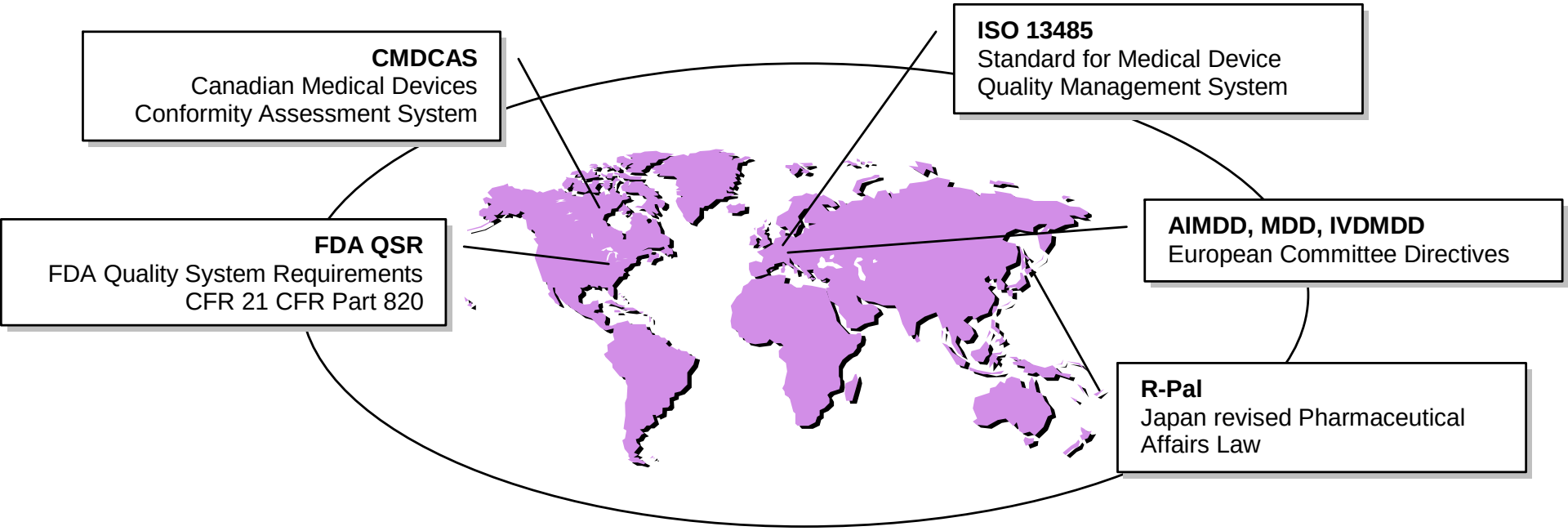
Medtronic

Cardiac Rhythm | **Diabetes** | **Neuro** | **…** | **Translation**

13,000 Employees
R&D located in US and NL
Various products, e.g. pacemaker

Manuals
Software apps.

Stringent Regulations



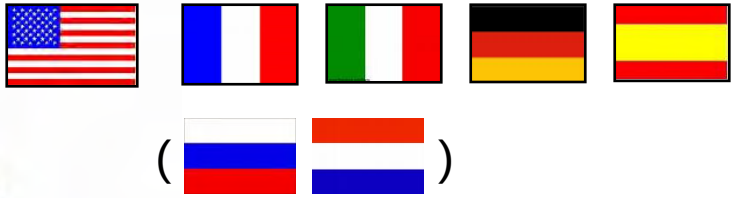
Solutions: Implantable Devices

Pacemaker

Insertable Cardiac Monitor

Follow-Up Programmer

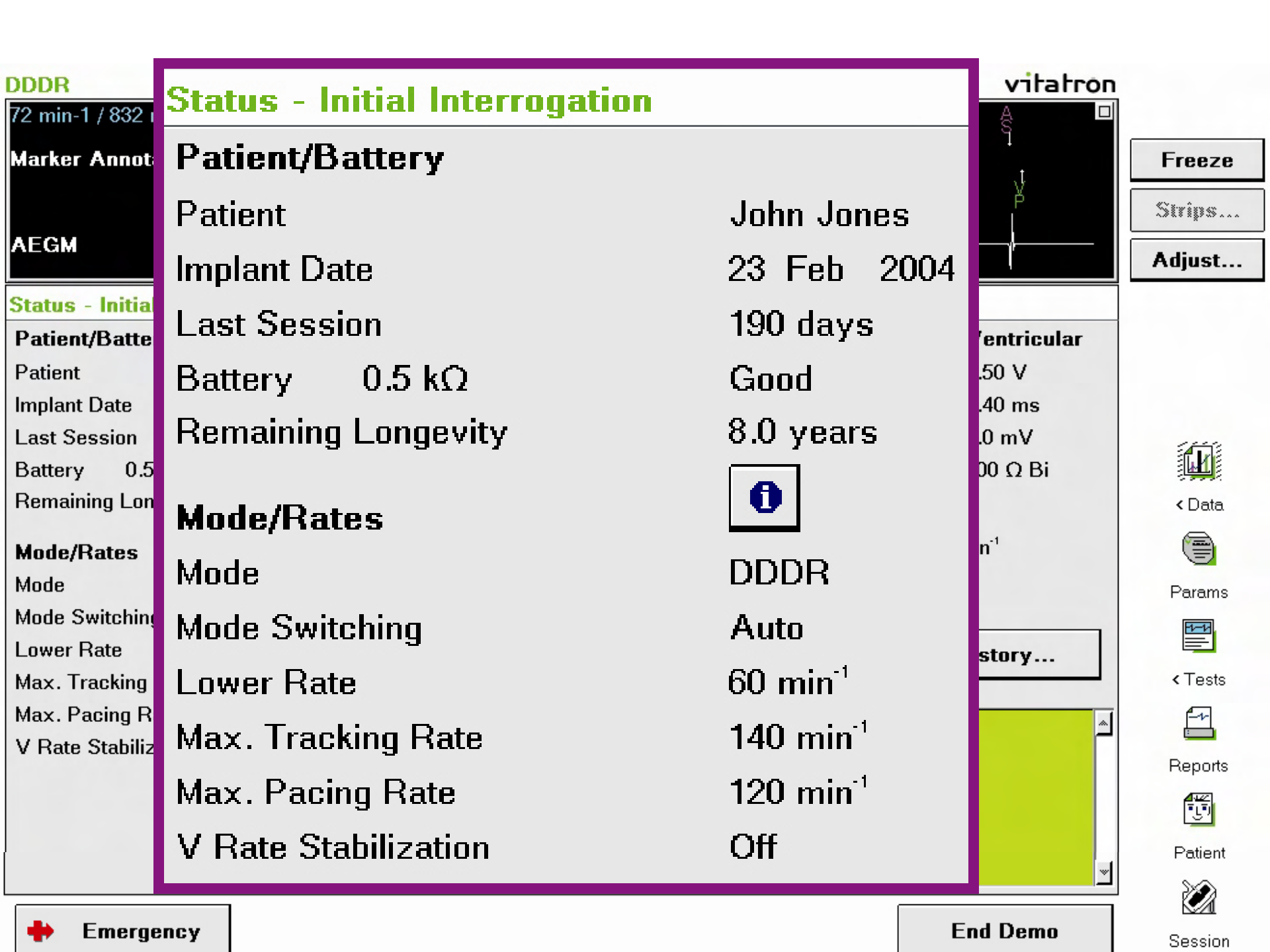
Multiple languages:



Programming head (not visible)

Strip printer

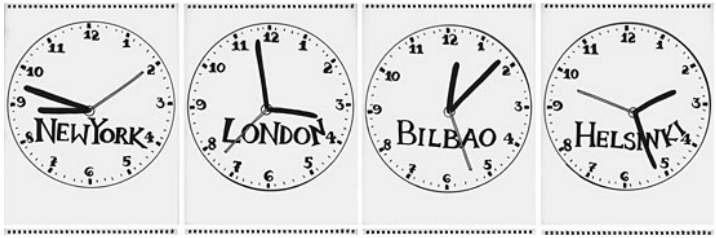
>160 Applications


DDDR
72 min-1 / 832
Marker Annot
AEGM
vitatron
Freeze
Strips...
Adjust...
Status - Initial Interrogation
Patient/Battery
Patient John Jones
Implant Date 23 Feb 2004
Last Session 190 days
Battery 0.5 kΩ Good
Remaining Longevity 8.0 years
Mode/Rates
Mode DDDR
Mode Switching Auto
Lower Rate 60 min-1
Max. Tracking Rate 140 min-1
Max. Pacing Rate 120 min-1
V Rate Stabilization Off
Data
Params
Tests
Reports
Patient
Session
Emergency
End Demo

Product development facts

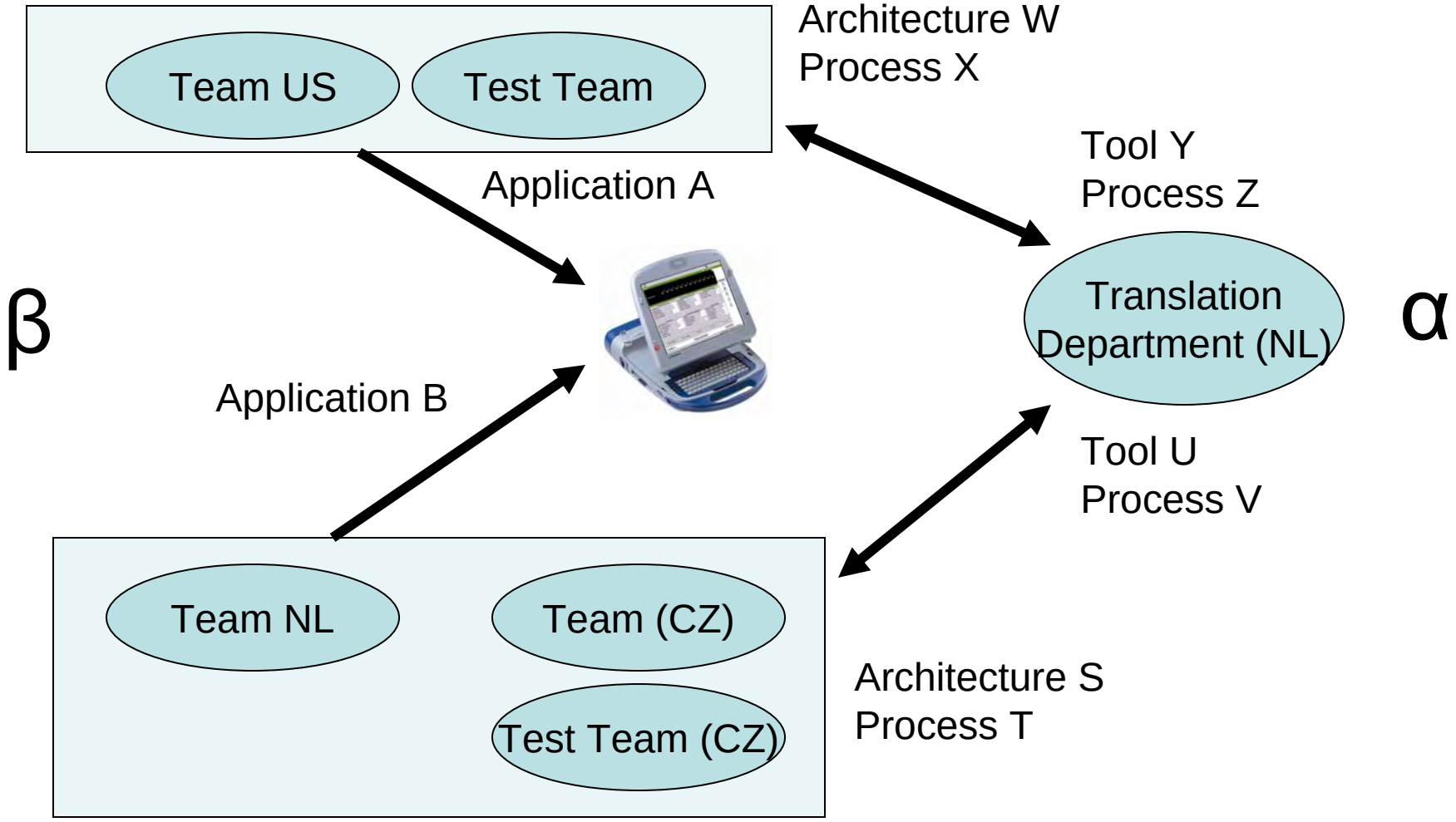
- Quality first!
  - Products and translations
- A business unit may have its own
  - **Development process**
  - **Software architecture**
  - **Localization process and tools**

  and even multiple processes within a business unit are possible
- Development in US and NL
  - Time-zones
- Localization per business unit
  - Different terms for similar products
  - Reuse of features (terms) between BU's



Multi Site Development @ Mdt

(very simplified picture)



The Company wide architecture

PROs

- One process
- One toolset
- One program environment
- One …

CONs

- Locked in to one …
- Inhibits innovation
- Sabotage?
- Change all at once?
- Inflexible.
  - Eg buy new company?
- …

- Setting the Context
- **Vision**
- Solution to unify the Localization process
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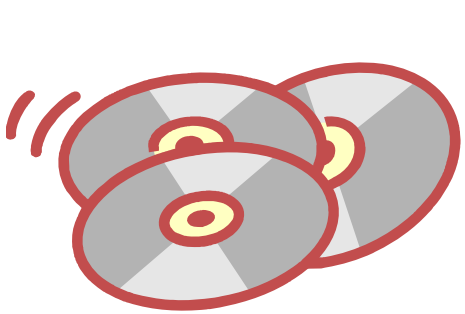
Vision

- Freedom for translators to localize application
- Translators use one translation environment



Software to be translated

Localization Tool
(COTS)

- Setting the Context
- Vision
- **Solution to unify the Localization process**
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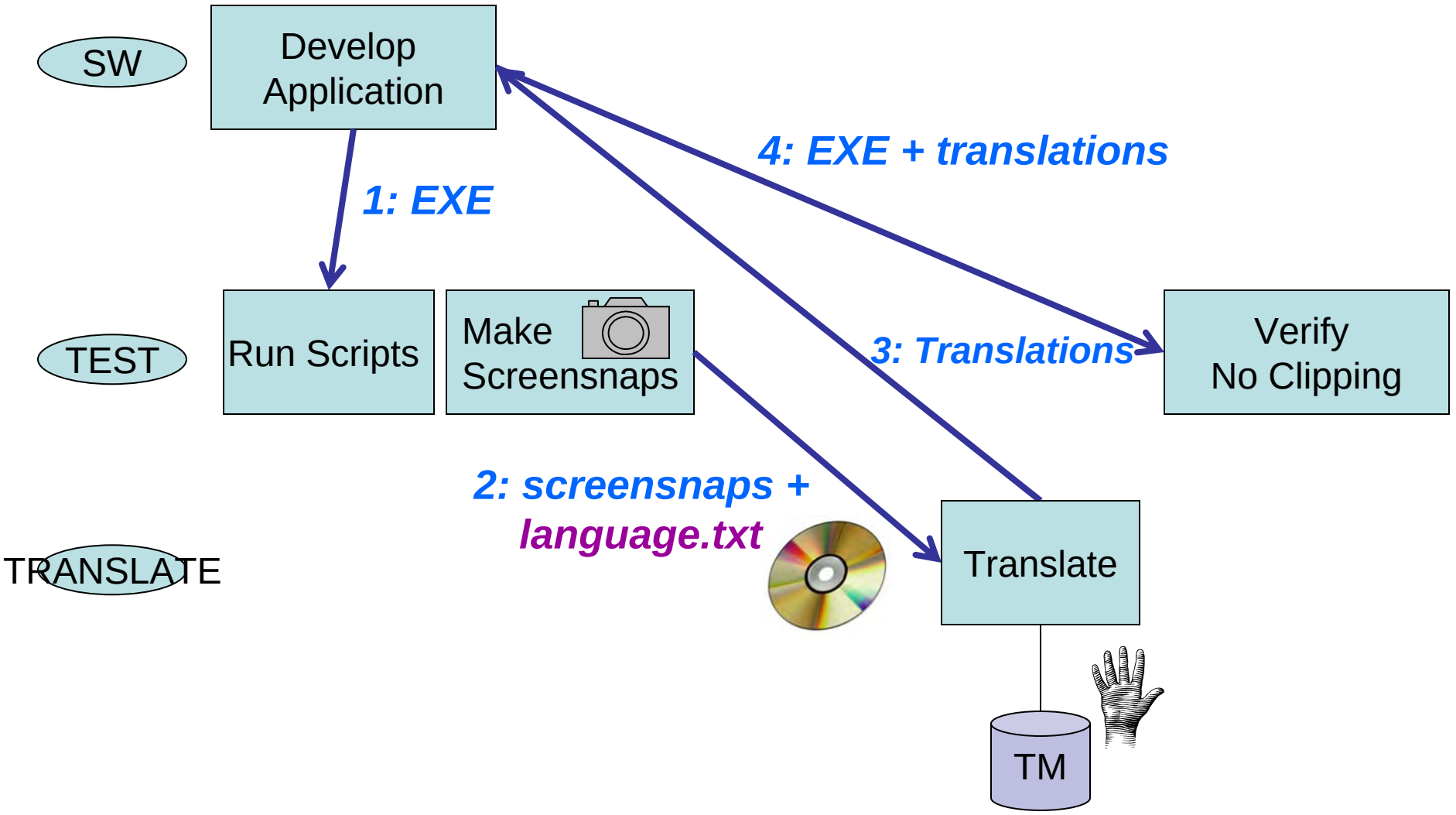
Localization Process with own tool



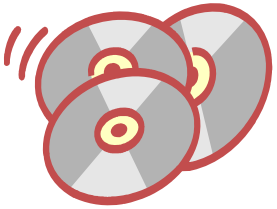
Tools for Localization of Software (SW)

- Translation Department desired a standard tool
  - Integrate with Translation Memory (TM)
  - Consistency over products
  - Partner with Business Units
  - ‘Free’ features with new releases of tool
- Already system for translation of manuals
  - Developed in-house tool
  - Using TM
- Inventory of localization tools
  - Organized presentations by vendors
  - None of the tools supports our Operating System ☹

The Idea: Tool Support for Legacy

Localization Tool
(COTS)

Toolbox
(by Medtronic)

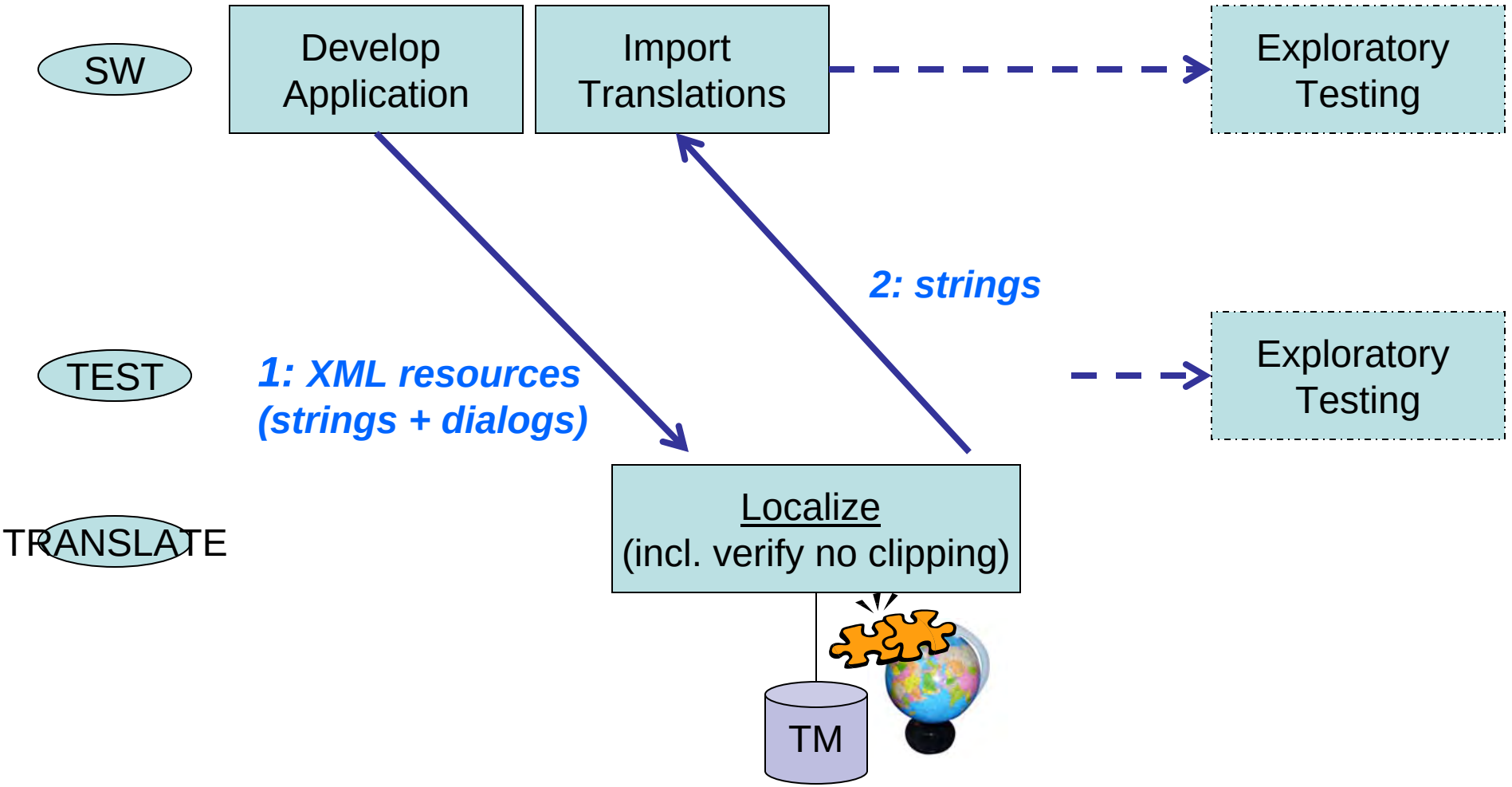


Add-in
(by Vendor)

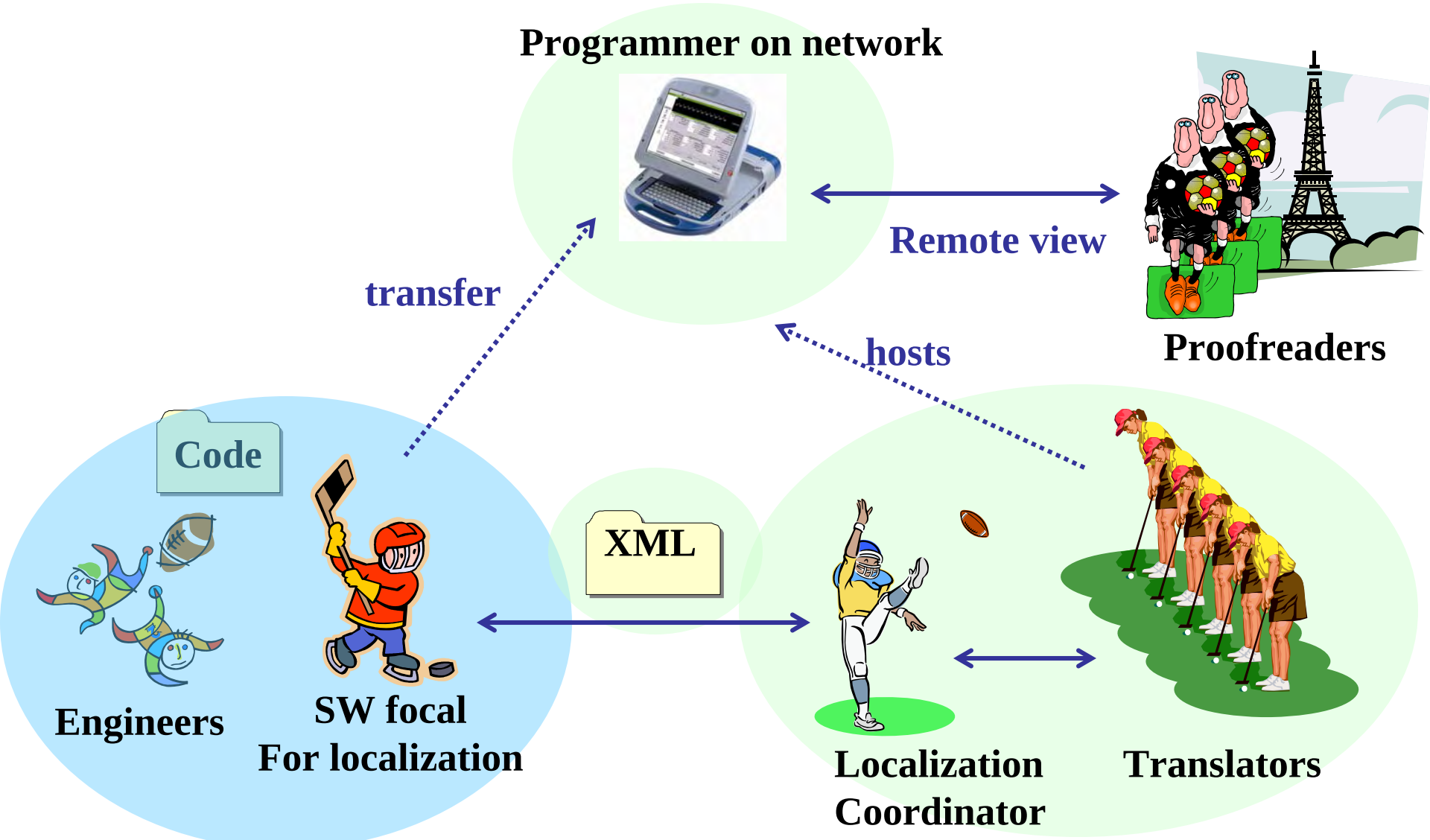
Legacy Resources
(labels and dialogs)

Visualization of widgets
(by Medtronic)

Localization Process using COTS tool



Organization from Localization perspective



- Setting the Context
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- Solution to unify the Localization process
- **Approach to implement the new process**
- Results
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Multidisciplinary approach

- Bottom-up
- Involved peers
  - Tool vendor (!)
  - Medtronic (current/future project + architects)
  - Translation Department
- Redesign the process
- Win-win for every involved party

Objectives / Opportunities

- Simplify translation process
  - Reduce translation iterations
  - Reduce costs for testing translations
- Shorten project cycle
- Prepared for the future
- Flexibility in planning

And maintain the high quality we have today

Roadmap (timeline)

- 4 months: Technical feasibility
- 9 months: Try-out in pilot
- 1 year: Execute in Small project NL
- 15 months: Execute in project US
- 2 years: All projects for Programmer

→ Today (2 years; all new projects use it)

- >3 years: Other Medtronic businesses

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Software Development Experiences
(= development + test departments)

- Localizing the first application

- Small project
- No quality issues
- Clipping checked by tool
- Continuous improvement
- Reduced effort from 29 to 3 man-months

Translation Department Experiences

- Costs unchanged, but
  - Included Learning Curve of tool and process
- Added value
  - Additional language editing above the planned ones
  - Extra testing
- Cycle time reduction
  - Screensnaps eliminated from process
  - Ball is with Translation Department all the time
- Easier to maintain consistency across applications

Culture-change

- Setting the Context
- Vision
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Conclusions

- Unified process in global company is beneficial
- Use mainstream technology for development
- Bottom-up approach is effective for change management processes
- Optimize the chain, not a link
- Assign focal points for localization in a project

Questions?

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Backup slides

Solutions for restoring health

Sudden cardiac arrest

Gastro-enterologic and urologic disorders

Atrial arrhythmia

Heart valve conditions

Coronary artery disease

Parkinson’s disease

Diabetes

Spasticity

Heart failure

Unexplained syncope (fainting)

Spinal disorders

Cardiac rhythm disorders

Bradycardia

Ear, nose and throat conditions

Hydrocephalus

Chronic pain

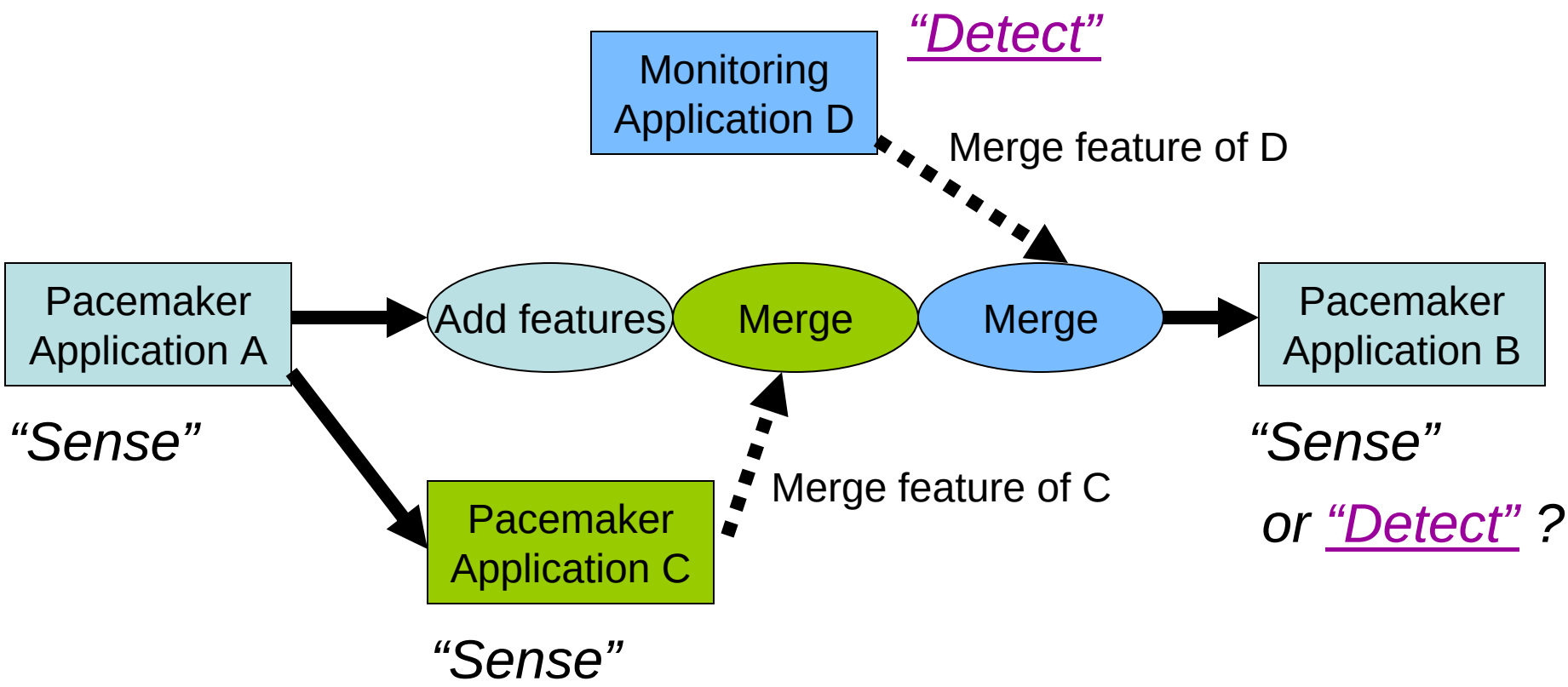
Organization (very simplified)

- Medtronic
  - Translations **(translations)**
  - CRDM
    - Core PD **(Pacemakers + Defibrillators)**
    - Vitatron **(Pacemakers)**
    - SQDM **(Diagnostics + Monitoring)**
    - New Therapies
    - Patient Management
  - Neuro
  - Diabetes
  - …

Vitatron + SQDM (Arnhem)

Translation (Heerlen)

Development: Localization Process



Timeline

2/28
Presentation CRDM staff

Prototype | Concept | Mgt buy-in

Nov 2 (2005) | Dec | Jan **(2006)** | Feb | **Mar**

Plan | Implementation Add-in | Pilot | Eval

Apr | May | Jun | **Jul** | Aug | Sep | 15

Tool Modification | Eval | First Application

Oct | Nov | Dec | Jan **(2007)**